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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/056,155	01/24/2002	Arshad Madni	534334-024	9472

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EXAMINER

TRINH, SONNY

ART UNIT	PAPER NUMBER
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2685

DATE MAILED: 05/14/2004

6

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/056,155

Applicant(s)

MADNI ET AL.

Examiner

Sonny TRINH

Art Unit

2685

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 January 2002.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 9-11 is/are allowed.
- 6) ☒ Claim(s) 1,2,4 and 12 is/are rejected.
- 7) ☒ Claim(s) 3,5-8 and 13 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 04/17/02 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>4</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Specification

1. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The following title is suggested: " Radio frequency amplifier with improved intermodulation performance."

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. **Claims 1-2, 4, 12** are rejected under 35 U.S.C. 102(b) as being anticipated by Nguyen ("Nguyen"; U.S. Patent Number 5,379,457).

Regarding **claim 1**, with reference to figure 2 and its detailed description, Nguyen discloses an amplifier comprising a first long tail pair of transistors (Q1, Q4), a second long tail pair of transistors (Q2, Q3), and a current source for setting tail currents of the first and second long tail pairs in a predetermined ratio, the current source comprising: a supply input (18); a first resistance (R5); a second resistance (R6); at least one first bipolar transistor (Q5) having a collector forming a first current source output, a base connected to a bias voltage source (Bias 16), and an emitter connected via said first

resistance (R7) to said supply input; and a second bipolar transistor (Q6) having a collector forming a second current source output, a base connected to said bias voltage source (Bias 16), and an emitter connected via said second resistance (R8) to said emitter of said first transistor (columns 3-4).

Regarding **claim 2**, Nguyen further discloses that at least one first transistor comprises a plurality of parallel-connected transistors (figure 2).

Regarding **claim 4**, Nguyen further discloses that the amplifier, comprising cross-connected first and second differential pairs of transistors, said first and second long tail pairs having outputs connected to said cross-connected first and second differential pairs of transistors (figure 2).

Regarding **claim 12**, this claim specifies the radio tuner in addition to the amplifier of claim 1 which is also taught by Nguyen (abstract, "radio frequency") and is therefore rejected for the same reasons.

13. A radio tuner including an amplifier comprising: a first current source; a first resistance; a first bipolar transistor having a collector, a base for connection to a signal source having a source impedance Z_s and an emitter connected via said first resistance to said first current source; a second resistance; and a second bipolar transistor having a collector, a base connected at signal frequencies to a common line and an emitter connected via said second resistance to said first current source, a value of said first resistance being substantially equal to a value of said second resistance plus $(Z_s/\beta_{sub.1})$, where $\beta_{sub.1}$ is a current gain of said first transistor.

Allowable Subject Matter

3. **Claims 3, 5-8, 13** are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Regarding **claim 3**, the prior art provided numerous examples of amplifier / mixer, but failed to disclose or fairly suggest the specific combination of structural and functional limitations set forth in claim 3, specifically, wherein the amplifier as specified in claim 1, in which said second resistance has a value substantially equal to:

$$((V_t \cdot \lambda) / I) \ln (\lambda / n)$$

where \ln is a natural logarithm, I is an output current of said first current source output, V_t is a thermal voltage, λ is said predetermined ratio, and n is a number of transistors forming said first transistor.

Regarding **claim 5**, the prior art of record also fails to show or fairly suggests the amplifier as specified in claim 1, having first and second inputs and third and fourth resistances, said first long tail pair comprising third and fourth transistors having input terminals connected to said first and second inputs, respectively, and common terminals connected via said third and fourth resistances, respectively, to said first current source output.

Regarding **claim 13**, the prior art of record also fails to show or fairly suggests the radio tuner including an amplifier as specified in claim 12 comprising: a first current

source; a first resistance; a first bipolar transistor having a collector, a base for connection to a signal source having a source impedance Z_s and an emitter connected via said first resistance to said first current source; a second resistance; and a second bipolar transistor having a collector, a base connected at signal frequencies to a common line and an emitter connected via said second resistance to said first current source, a value of said first resistance being substantially equal to a value of said second resistance plus $(Z_s/\beta_{sub.1})$, where $\beta_{sub.1}$ is a current gain of said first transistor.

4. **Claims 9-11** are allowed.

The following is an examiner's statement of reasons for allowance:

Regarding **claim 9**, the prior art of record also fails to show or fairly suggests the amplifier comprising: a first current source; a first resistance; a first bipolar transistor having a collector, a base for connection to a signal source having a source impedance Z_s and an emitter connected via said first resistance to said first current source; a second resistance; and a second bipolar transistor having a collector, a base connected at signal frequencies to a common line and an emitter connected via said second resistance to said first current source, a value of said first resistance being substantially equal to a value of said second resistance plus $(Z_s/\beta_{sub.1})$, where $\beta_{sub.1}$ is a current gain of said first transistor.

Claims 10-11 are allowed by virtue of their dependency on claim 9.

Conclusion

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks
Washington, D.C. 20231

or faxed to:

(703) 872-9306, (for formal communications intended for entry, for informal or draft communications, please label "PROPOSED" or "DRAFT")

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA, 6th Floor (Receptionist).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sonny TRINH whose telephone number is 703-305-1961. The examiner can normally be reached on Monday-Thursday and on alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ed URBAN can be reached on 703-305-4385. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should

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you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



SONNYTRINH
PRIMARY EXAMINER

5/10/04